

SECTION A (40 marks)

1. Add: $\frac{4}{7}$ to $\frac{5}{7}$

$$\frac{5}{7} + \frac{4}{7} = \frac{5+4}{7} \quad \left| \begin{array}{l} = \frac{(5+4)}{7} \\ = \frac{9}{7} \end{array} \right.$$

2. Write 49,015 in words.

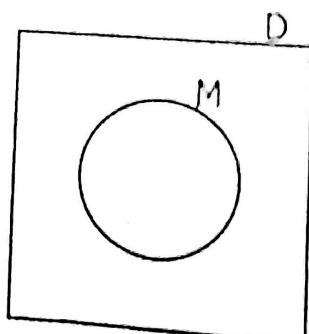
Thousands Units
49 | 015

Forty nine thousand fifteen.

3. Solve: $4 - y = 6$

$$\begin{array}{rcl} 4-y & = 6 & -y = 2 \\ 4-4-y & = 6-4 & -1 \\ -y & = 2 & \end{array} \quad \left| \begin{array}{l} -y = \frac{2}{1} \\ -1 \\ -y = -2 \end{array} \right.$$

4. Describe the relationship shown on the Venn diagram below.



Set M is a subset of set D

5. Find the square of the missing number in the sequence below.

$$8, 9, 12, 18, 28, \dots$$

$\uparrow 1$ $\uparrow 3$ $\uparrow 6$ $\uparrow 10$ $\uparrow 15$

$$28 + 15 = 43$$

$$(43)^2 = 43 \times 43$$

$$\begin{array}{r} 43 \\ \times 43 \\ \hline \end{array}$$

$$\begin{array}{r} 129 \\ + 1720 \\ \hline 1849 \end{array}$$

The square of 43 is 1849

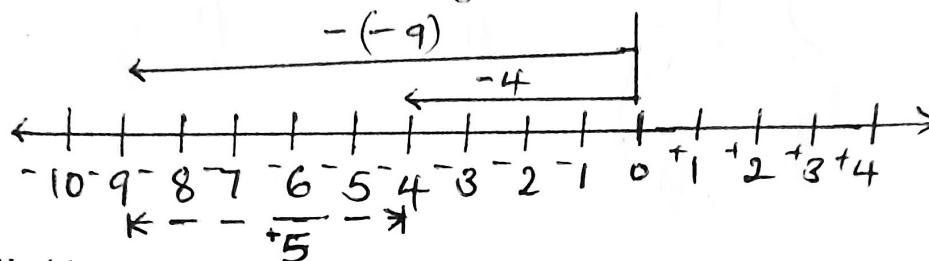
6. Muruuli collected mangoes as represented by the tallies below. How many mangoes did he collect?

$$(5+5)+(5+5)+(5+3)$$

$$(10 + 10) + 8$$

20 + 8

7. Work out: $-4 - -9$ using a number line.



$$-4 - 9 = +5$$

8. Kaddu moved from Mazinga to Kyotera in 250 minutes. How many hours did he take moving?

Time taken \Rightarrow

$$60 \text{ minutes} = 1 \text{ hour}$$

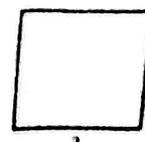
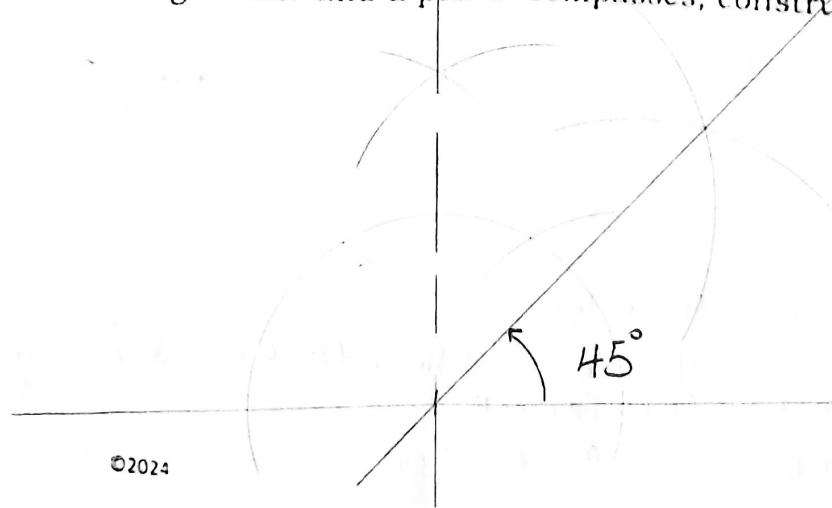
$$250 \text{ minutes} = \underline{1 \text{ hour} \times 250 \text{ minutes}} \quad 4 \text{ rem } 10$$

$$= 4 \frac{10}{60} \text{ minutes}$$

10
60

$4\frac{1}{8}$ hours

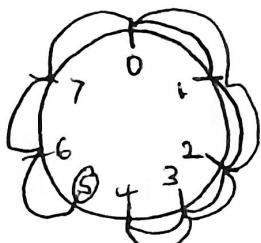
9. Using a ruler and a pair of compasses, construct an angle of 45° .



10. Ampaire had $\frac{2}{3}$ of the sugarcane, she gave $\frac{1}{4}$ of it to her friend Shama. How much sugarcane did she remain with?

Fraction had	Fraction given out	Remaining fraction
$\frac{2}{3}$	$\frac{1}{4}$ of $\frac{2}{3}$	$\frac{1}{4} \times \frac{2}{3} = \frac{1}{6}$
		$\frac{6}{6} - \frac{1}{6} = \frac{5}{6}$

11. Using a dial method work out $4 - 7 = \dots \pmod{8}$.



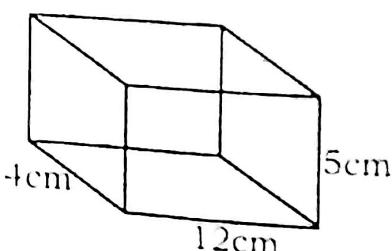
$$4 - 7 = 5 \pmod{8}$$

12. 12 men can dig a shamba in 5 days. How many more days will 10 men need to do the same work?

12 men take 5 days	Days taken
10 men take $\frac{5 \text{ days} \times 12 \text{ men}}{10 \text{ men}}$	$\frac{60}{10} = 6$
$\frac{60 \text{ days}}{10}$	6 days

6 days - 5 days
1 more day

13. Find the total length of the edges of the figure below.



Total length of the edges

$$\begin{aligned}
 &= \text{Sum of the 4 long sides} + \text{Sum of the 4 wide sides} + \text{Sum of the 4 heights} \\
 &= (4 \times L) + (4 \times W) + (4 \times H) \\
 &= (4 \times 12\text{cm}) + (4 \times 4\text{cm}) + (4 \times 5\text{cm}) \\
 &= 48\text{cm} + 16\text{cm} + 20\text{cm} \\
 &= 64\text{cm} + 20\text{cm} \\
 &= 84\text{cm}
 \end{aligned}$$

14. A motorist covered a distance of 200km from Mitooma to Mbarara at a steady speed of 60km/h. How long did the motorist take to reach Mbarara?

$$\begin{array}{l} \text{Time taken} = \frac{\text{Distance covered}}{\text{Speed used}} \\ = \frac{200 \text{ km}}{60 \text{ km/h}} \\ = \frac{200}{60} \text{ km/h} \end{array}$$

$\frac{200}{60}$	$\frac{3 \text{ rem } 2}{60}$	$\frac{200}{60} \text{ h}$	Time taken
$\frac{1}{1}$	$\frac{1}{1}$	$\frac{1}{1}$	was $3\frac{1}{3}$ hours
$\frac{3\frac{1}{3}}{60}$	$\frac{1}{60}$	$3\frac{1}{3} \text{ h.}$	

15. Find the smallest number that can be divided by either 6 or 8 leaving a remainder of 3.

The smallest number is the LCM of 6 and 8 Add the remainder 3

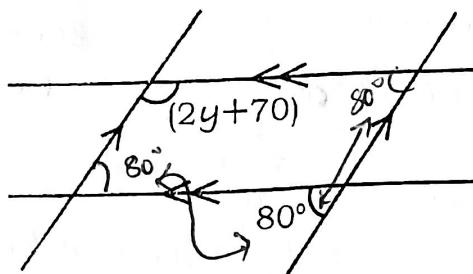
2 6 8	3 9 1	8 cm is $2 \times 2 \times 2 \times 3$	24 + 3
2 3 4	3 1 1	= $(2 \times 2) \times (2 \times 3)$	<u>27</u>
2 3 2	3 1 1	4×6	
3 3 1			

16. Calculate the number of elements in a set with 63 proper subsets.

$$\begin{array}{l} (2^n) - 1 = \text{Number of proper subsets} \\ 2^n - 1 = 63 \\ 2^n - 1 + 1 = 63 + 1 \end{array}$$

$2^n = 64$	$\frac{128}{2} = 64$	$2^n = 64$
$2^n = 2 \times 2 \times 2 \times 2 \times 2 \times 2$	$\frac{128}{2} = 64$	$2^n = 2^6$
$2^n = 64$	$64 = 64$	$n = 6$
		Set has 6 elements

17. Find the value of the unknown angle.



$$\begin{aligned} (2y + 70^\circ) + 80^\circ &= 180^\circ \quad (\text{Corresponding angles}) \\ 2y + 70^\circ + 80^\circ &= 180^\circ \\ 2y + 150^\circ &= 180^\circ \\ 2y + 150^\circ - 150^\circ &= 180^\circ - 150^\circ \\ 2y &= 30^\circ \end{aligned}$$

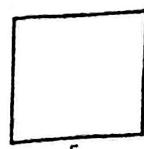
$2y = 30^\circ$	$2y = \frac{30}{2}^\circ$	$2y = 15^\circ$
$y = 15^\circ$	$y = \frac{15}{2}$	$y = 7.5^\circ$

18. Round off 29.995 to two decimal places.

1 0 9 9 5	1 RP.V	
2 9 . 9 9 5	$\frac{1}{100}$	$= 0.01$
	$\frac{1}{100}$	

$$\begin{array}{r} 29.995 \\ + 0.01 \\ \hline 30.00 \end{array}$$

$$29.995 \approx 30.00$$



19. Akello had notes numbered consecutively from KY4864118 to KY4864217. If each note was worth sh. 20,000, find the total amount Akello had.

Number of notes he had.

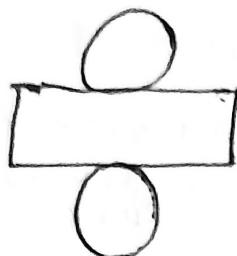
Last note - First note

$$\text{KY4864217} - \text{KY4864118}$$

$$\begin{array}{r}
 \text{KY4864217} \\
 - \text{KY4864118} \\
 \hline
 000099 \\
 99+1 \\
 100 \text{ notes}
 \end{array}$$

Total amount of money he has
Number of notes \times Value
$100 \times \text{sh } 20,000$
$\text{sh } 2,000,000$
$\times 100,000$
$2,000,000$
<u>$\text{sh } 2,000,000$</u>

20. Draw a net of a closed cylinder in the space below.



SECTION B (60 MARKS)

- 21(a) In a school, the ratio of boys to girls is 4:5 respectively. If there are 240 boys, how many more girls are there than boys?

(3 marks)

	Boys	Girls	Total
Ratios	4	5	$4+5=9$
Number	240	$5 \times 60 = 300$	$9 \times 60 = 540$

Number of girls than boys

$$300 - 240$$

60 more girls

4 parts represent 240 pupils

1 part represents $\frac{240}{4} = 60$ pupils

$\frac{60}{4} = 15$ pupils

so 1 part represents 60 pupils

(b) Simplify: $\frac{1}{4} + \frac{1}{5} \div 1\frac{2}{5}$

$$= \frac{1}{4} + \frac{1}{5} \div 1\frac{2}{5}$$

$$= \frac{1}{4} + \frac{1}{5} \div \frac{(5 \times 1) + 2}{5}$$

$$= \frac{1}{4} + \frac{1}{5} \div \frac{5+2}{5}$$

$$= \frac{1}{4} + \frac{1}{5} \div \frac{7}{5}$$

$$= \frac{1}{4} + \left(\frac{1}{5} \div \frac{7}{5} \right)$$

$$= \frac{1}{4} + \left(\frac{\frac{1}{5}}{\frac{7}{5}} \right)$$

$$= \frac{1}{4} + \left(\frac{1 \times 1}{5 \times 7} \right)$$

$$= \frac{1}{4} + \frac{1}{35}$$

LCD of 4 and 7 is 28

$$= \left(\frac{1 \times 7}{4 \times 7} \right) + \left(\frac{1 \times 4}{7 \times 4} \right)$$

$$= \frac{7}{28} + \frac{4}{28}$$

(2 marks)

$$= \frac{7+4}{28}$$

$$= \frac{11}{28}$$



6

22(a) Igambi went shopping and bought the following items.

30 oranges at sh. 500 for every heap of 3 oranges.
 500gm of salt at sh. 1,200 per kg.
 2.5kg of sugar at sh. 4,000 each.
 5kg of rice at sh. 22,500

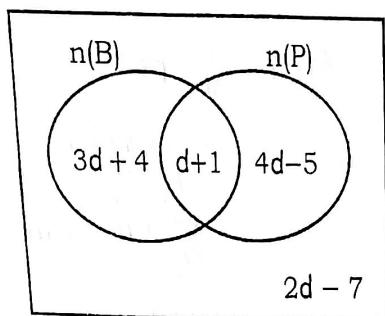
(a) How much did she buy each kg of rice? (2 marks)

$$\begin{array}{l} 5\text{kg} \quad \text{She used sh } 22,500 \\ 1\text{kg} \quad \text{She will use sh } \frac{22,500}{5} \times 1\text{kg} \end{array} \quad \boxed{\text{sh } 4500}$$

(b) Calculate her total expenditure. (4 marks)

Cost of Oranges 3 oranges cost sh 500 30 oranges cost sh $\frac{500}{3} \times 30$	Cost of Salt 1kg costs sh 1,200 500gm cost sh $\frac{1200}{2} \times 500$	Cost of Sugar 1kg costs sh 4,000 2.5kg cost sh 4000×2.5	Total sh 10,000
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23. The Venn diagram below represents the number of pupils who eat beans (B) and peas (P). Study and use it to answer questions that follow.



$$\begin{array}{r} \text{Total exp.} \\ \text{sh } 22,500 \\ + \text{sh } 10,000 \\ + \text{sh } 4,500 \\ \hline \text{sh } 37,000 \\ - \text{sh } 5,000 \\ \hline \text{sh } 42,000 \end{array}$$

(a) If 40 pupils eat either beans or peas, find the value of d. (2 marks)

$$\text{Either beans or peas} = 40$$

$$n(B-P) + n(B \cap P) + n(P-d) = 40$$

$$(3d+4) + (d+1) + (4d-5) = 40$$

$$3d+4+d+1+4d-5 = 40$$

$$(3d+1+4d)+(4+1-5) = 40$$

$$8d + 5 - 5 = 40$$

$$8d = 40$$

$$d = 5$$

$d = 5$ pupils

$$\begin{array}{r} 8d = 40 \\ 8 \\ \hline d = 5 \end{array}$$

(b) Find the probability of selecting a pupil at random who does not eat peas.

(2 marks)

$$\text{Probability} = \frac{n(E)}{n(S)}$$

$$n(E) = 2d - 7$$

$$n(S) = (3d+4) + (d+1) + (4d-5) + (2d-7)$$

$$= (3d+4) + (d+1) + (4d-5) + (2d-7)$$

$$(2d-7)$$

$$(3d+4) + (d+1) + (4d-5) + (2d-7)$$

$$(2 \times 5) - 7$$

$$(2 \times 5) + 4 + 1 + (4 \times 5) - 5 + (2 \times 5) - 7$$

24(a) Given digits 4 5 0 9, express the least 4-digit numeral formed in an expanded form using powers. (2 marks)

Least / Small no is 4059
 $\begin{array}{r} 4 \\ 0 \\ 5 \\ 9 \end{array}$

$$(4 \times 10^3) + (0 \times 10^2) + (5 \times 10^1) + (9 \times 10^0)$$

(b) Find the square root of 1.96.

$$\sqrt{1.96} = \sqrt{\left(\frac{196}{100}\right)^2}$$

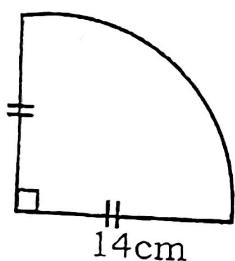
$$= \sqrt{\left(\frac{14}{10}\right)^2}$$

$$= \frac{14}{10}$$

$$= 1.4$$

$$\sqrt{1.96} = 1.4 \quad (2 \text{ marks})$$

25(a) Work out the area of the figure below.



(3 marks)

$$\begin{aligned} \text{Area} &= \frac{1}{4} \pi r^2 \\ &= \frac{1}{4} \times \frac{22}{7} \times (14)^2 \text{ cm} \\ &= \frac{1}{4} \times \frac{22}{7} \times 11 \text{ cm} \times 14 \text{ cm} \\ &= 1 \times 11 \times 1 \text{ cm} \times 14 \text{ cm} \end{aligned}$$

$$\begin{array}{r} 11 \text{ cm} \times 14 \\ \times 11 \text{ cm} \\ \hline 154 \text{ cm}^2 \end{array}$$

(b) Find the diameter of a circle whose circumference is 44dm.
 (Take $\pi = \frac{22}{7}$)

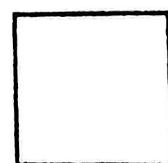
$$\pi d = c$$

$$\frac{22}{7} \times d = 44 \text{ dm}$$

$$\frac{22}{7} \times \frac{1}{22} \times d = 44 \text{ dm} \times \frac{1}{22} \quad (2 \text{ marks})$$

$$d = 2 \text{ dm} \times 7$$

$$d = 14 \text{ dm}$$



- 26(a) In an interview of 20 questions, 5 marks were awarded for every correct response and 2 marks were deducted for every wrong response. If Nobert passed 16 questions only, what was his score? (3 marks)

$$\begin{array}{l}
 (16 \text{ questions} \times 5 \text{ marks}) \\
 (16 \times 5) \text{ marks} \\
 \cdot 80 \text{ marks}
 \end{array}
 \left| \begin{array}{l}
 20 - 16 \text{ questions} \\
 4 \text{ questions} \\
 4 \times 2 \text{ marks} \\
 8 \text{ marks} \\
 80 \text{ marks} - 8 \text{ marks}
 \end{array} \right| \boxed{72 \text{ total marks}}$$

- (b) If Joan scored 58 marks, how many questions did she fail? (2 marks)

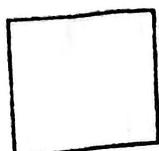
$$\begin{array}{l}
 \text{Number of correct questions} \\
 (\text{Total marks} - \text{marks scored}) \\
 (\text{Mark for correct response}) - (\text{Mark for wrong response})
 \end{array}
 \left| \begin{array}{l}
 = \frac{(100 - 58) \text{ marks}}{(5 - 2)} \\
 = \frac{42}{3} \\
 = 14
 \end{array} \right| \begin{array}{l}
 14 \text{ correct questions} \\
 \text{Number of wrong questions} \\
 \text{Total questions} - \text{Correct questions} \\
 20 \text{ ques.} - 14 \text{ ans.}
 \end{array}$$

- 27(a) Using a ruler, a pair of compasses and a sharp pencil only, construct triangle BCE where $\angle CEB = 45^\circ$, $\overline{BE} = 10\text{cm}$ and $\overline{CE} = 8\text{cm}$. (4 marks)

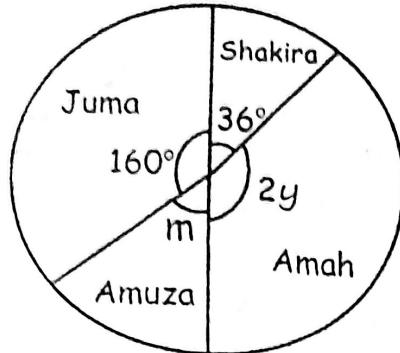
Sketch diagram



- (b) Find the length of BC. 7cm (1 mark)



- 28(a) The pie chart below shows how Musa shared his 72 cows to his children. Use it to answer questions that follow.



- (a) Find the value of m . (2 marks)

$$160^\circ + M = 180^\circ \text{ (supplementary angles)}$$

$$160^\circ + M = 180^\circ$$

$$160^\circ - 160^\circ + M = 180^\circ - 160^\circ$$

$$M = 20^\circ$$

- (b) Calculate the value of y .

~~$$160^\circ + M = 180^\circ \text{ (supplementary angles)}$$~~

~~$$160^\circ + M = 180^\circ$$~~

~~$$160^\circ - 160^\circ + M = 180^\circ - 160^\circ$$~~

~~$$M = 20^\circ$$~~

$$2y + 36^\circ = 180^\circ \text{ (supplementary angles)}$$

$$2y + 36^\circ = 180^\circ$$

$$2y + 36^\circ - 36^\circ = 180^\circ - 36^\circ$$

$$2y = 144^\circ$$

$$\frac{2y}{2} = \frac{144}{2}$$

$$y = 72^\circ$$

- (c) How many cows did Amah get?

$2y$ % of the cows

$2y \times 72 \text{ cows}$

$\frac{(2y)}{360} \times 72$

$$\frac{(2 \times 72)}{360} \times 72$$

$$\frac{144}{360} \times 72$$

$$\frac{144}{10} \times 2$$

$$28.8 \text{ cows}$$

29. Guma and Aketch shared a certain amount of money in such a way that Guma got thrice as much as Aketch got. If the difference in their shares is sh. 18,000,

- (a) find the amount each got

(3 marks)

G	A	Difference
Part	AK	G
Ratio 3:1	K	$(3 \times K) - K$
Number	?	sh 18000

let Aketch's part be rep. by K

$$(3 \times K) - K = \text{sh } 18000$$

$$= \text{sh } 18000$$

$$3K - K = \text{sh } 18000$$

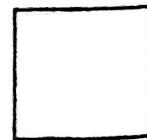
$$2K = \text{sh } 18000$$

$$\frac{2K}{2} = \frac{18000}{2}$$

$$K = \text{sh } 9000$$

Each got

Aketch got
 $K = \text{sh } 9000$



Guma got

$$(3 \times K) = 3K$$

$$= 3 \times K$$

$$= 3 \times \text{sh } 9000$$

$$= \text{sh } 9000 \times 3$$

$$\text{sh } 27,000$$

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(b) How much did they share altogether? Now (2 marks)

Gumas amount & Ketch's amount

Sh 27000 + Sh 9000

$$\begin{array}{r} 27000 \\ + 9000 \\ \hline 36000 \end{array}$$

Sh 36000.

30. The sum of three consecutive odd numbers is 81.

(a) Find the numbers.

1st	2nd	3rd	Total
n	$n+2$	$n+4$	81

Let the first number be rep. by n

$$n + (n+2) + (n+4) = 81$$

$$\begin{aligned} n+n+2+n+4 &= 81 \\ (n+n+n)+(2+4) &= 81 \\ 3n+6 &= 81 \\ 3n+6-6 &= 81-6 \\ 3n &= 75 \\ n &= 25 \end{aligned}$$

(3 marks)

$\begin{array}{l} \text{1st number} = 25 \\ \text{2nd number} = 25+2 \\ \text{3rd number} = 25+4 \end{array}$

$= 25, 27 \text{ and } 29$ (2 marks)

(b) Find the product of the first and the third numbers.

Product of the first and third

$$25 \times 29 \quad \begin{array}{r} 225 \\ + 500 \\ \hline 725 \end{array}$$

The product is
= 725

31(a) Given that $34_n = 112$ four, find the value of n . (3 marks)

$$\begin{aligned} 34_n &= 112 \text{ four} \\ (3 \times n^3) + (4 \times n^0) &= (1 \times 4^3) + (1 \times 4^1) + (2 \times 4^0) \\ 3n^3 + 4 &= 16 + 4 + 2 \\ 3n^3 + 4 - 4 &= 22 - 4 \\ 3n^3 &= 18 \end{aligned}$$

$$\begin{array}{l} 3n = 18 \\ \frac{3}{2} \\ \frac{n}{6} \end{array}$$

n is base 5, \therefore

(b) Work out:

$$\begin{array}{r} 233_{\text{five}} \\ + 23_{\text{five}} \\ \hline 311_{\text{five}} \end{array}$$

$$\begin{aligned} 3+3 &= 6 \div 5 \\ &= 1 \text{ rem } 1 \end{aligned}$$

$$\begin{aligned} 3+2 &= 5+1 \\ &= 6 \div 5 \\ &= 1 \text{ rem } 1 \end{aligned}$$

$$\begin{aligned} 2+2+1 &= 5 \\ &= 3 \end{aligned}$$



11

- 32(a) A motorist left town R for town W at 6:18 p.m. driving at a steady speed of 60km/h and covered 300km. At what time did he reach town W? (3 marks)

$$\text{Time taken} = \text{Distance covered} \div \text{Speed}$$

$$\begin{aligned}
 &= 300 \text{ km} \div 60 \text{ km/hr} \\
 &= \frac{5}{6} \text{ hr} \\
 &= \frac{300 \text{ km}}{60 \text{ km/hr}} \\
 &= \underline{\underline{5 \text{ hr}}}
 \end{aligned}$$

$$\begin{array}{r}
 6 : 18 \text{ pm} \\
 + 5 : 00 \text{ hr} \\
 \hline
 11 : 18
 \end{array}$$

He reached at 11:18pm

Time he reached to the town

Add 5 hrs + 6:18pm

- (b) Express 19:39 hrs in 12-hour clock system. (2 marks)

$$\begin{array}{r}
 \text{Hrs} \qquad \text{Mins} \\
 \hline
 19 : 39 \text{ hrs} \\
 - 12 : 00 \text{ hrs} \\
 \hline
 07 : 39
 \end{array}$$

7:39 pm

END

